

Parkvall et al.
Appl. No. 09/742,283
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) In a system where data packets are communicated from a first node over a first channel to a second node and a feedback signal is sent back to the first node from the second node over a second channel, a method comprising:

the first node determining a condition of the second channel,

the first node determining whether the condition of the second channel is sufficient for the first node to accurately receive a feedback signal from the second node, and

based on the determined condition of the second channel, the first node ~~controlling~~ scheduling transmission of data packets over the first channel including delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold,

wherein the feedback signal is an acknowledge signal, a negative acknowledge signal, or a lost signal corresponding to a data packet transmitted over the first channel.

2. (Canceled).

3. (Original) The method in claim 1, further comprising:

the first node determining a condition of the first channel, and

based on the determined condition of the first and second channels, the first node controlling transmission of data packets over the first channel.

4. (Canceled).

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5. (Currently Amended) The method in claim 31, wherein the sufficiency of the condition of the second channel is determined so that a probability of error in the received feedback signal is below an error threshold.

6. (Canceled).

7. (Canceled).

8. (Currently Amended) The method in claim 73, wherein the predetermined threshold is a signal-to-interference ratio (SIR).

9. (Currently Amended) The method in claim 73, further comprising:
transmitting the data packets after a preset delay period expires.

10. (Original) The method in claim 1, wherein the first node is a base station in a radio communications network and the second node is a wireless user equipment unit, and wherein the first channel is a downlink radio channel and the second channel is an uplink radio channel.

11. (Original) The method in claim 1, wherein the first node is a wireless user equipment unit in a radio communications network and the second node is a base station, and wherein the first channel is an uplink radio channel and the second channel is a downlink radio channel.

12. (Original) The method in claim 1, wherein the first node is a radio network controller coupled to one or more base stations in a radio communications network and the second node is a wireless user equipment unit.

13. (Original) The method in claim 1, further comprising:
detecting another condition, and
controlling the data packet transmission over the first channel without regard to the condition of the second channel when the other condition is detected.

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14. (Currently Amended) In a mobile communications system where data packets are communicated between one or more base stations and wireless user equipment units over a radio interface, a method implemented in one of the base stations, comprising:

determining a signal quality of an uplink channel from the wireless user equipment to the base station, and

scheduling transmission of data packets over a downlink channel from the base station to the wireless user equipment taking into on the determined quality of the uplink channel including delaying transmission of data packets over the downlink channel until the quality of the uplink channel exceeds a predetermined threshold,

wherein the feedback signal is an acknowledge (ACK) signal, a negative acknowledge (NACK) signal, or a lost signal corresponding to a data packet transmitted over the first channel, and

wherein the base station employs an automatic repeat request (ARO) protocol to provide reliable data packet communications with the wireless user equipment, the method further comprising:

determining whether the signal quality of the uplink channel is sufficient for the base station to accurately receive an ARO feedback signal from the wireless user equipment.

15. (Original) The method in claim 14, wherein the signal quality is a signal-to-interference ratio (SIR).

16. (Original) The method in claim 14, further comprising:

determining a signal quality of the downlink channel, and

based on the determined signal quality of the uplink and downlink channels, scheduling transmission of data packets over the downlink channel.

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17. (Canceled).

18. (Currently Amended) The method in claim ~~17~~14, wherein the sufficiency of the signal quality of uplink channel is determined so that a probability of error in the received ARQ feedback signal is below a threshold.

19. (Canceled).

20. (Canceled).

21. (Currently Amended) The method in claim ~~20~~14, further comprising:
transmitting the data packets after a preset delay period expires.

22. (Original) The method in claim 14, wherein the wireless user equipment is communicating with two base stations in a soft handover communication.

23. (Original) The method in claim 14, further comprising:
detecting a predetermined condition, and
scheduling the downlink data packet transmission without regard to the uplink channel signal quality when the predetermined condition is detected.

24. (Original) The method in claim 23, wherein the detected condition is when a Doppler frequency of the uplink channel exceeds a threshold.

25. (Original) The method in claim 23, wherein the detected condition is when a load of a cell corresponding to the base station is less than a threshold.

26. (Currently Amended) A first communications unit for communicating data packets over a first channel to a second communications unit, where the second communications unit sends a feedback signal to the first communications unit over a second channel, the first communications unit comprising:

a detector capable of determining a condition of the second channel, and

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a controller capable of controlling transmission of data packets over the first channel based on the determined condition of the second channel,

wherein the controller includes a scheduler capable of delaying transmission of data packets over the first channel until the quality of the second channel exceeds a predetermined threshold, and

wherein the feedback signal is an acknowledge signal, a negative acknowledge signal, or a lost signal corresponding to a data packet transmitted over the first channel, and

wherein the controller is capable of determining whether the condition of the second channel is sufficient for the first communications unit to accurately receive a feedback signal from the second communications unit.

27. (Original) The communications unit in claim 26, wherein the controller includes a scheduler capable of scheduling transmission of data packets over the first channel based on the determined condition of the second channel.

28. (Original) The communications unit in claim 26, further comprising:

a detector capable of determining a condition of the first channel,

wherein the controller is capable of scheduling transmission of data packets over the first channel based on the determined conditions of the first and second channels.

29. (Canceled).

30. (Original) The communications unit in claim 29, wherein the predetermined threshold is a signal-to-interference ratio (SIR).

31. (Canceled).

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32. (Currently Amended) The communications unit in claim ~~31~~26, wherein the sufficiency of the condition of the second channel is determined so that a probability of error in the received feedback signal is below a threshold.

33. (Canceled).

34. (Original) The communications unit in claim 26, wherein the first communications unit is a base station in a radio communications network and the second communications unit is a wireless user equipment unit, and wherein the first channel is a downlink radio channel and the second channel is an uplink radio channel.

35. (Original) The communications unit in claim 26, wherein the first communications unit is a wireless user equipment unit in a radio communications network and the second communications unit is a base station, and wherein the first channel is an uplink radio channel and the second channel is a downlink radio channel.

36. (Original) The communications unit in claim 26, wherein the first communications unit is a radio network controller coupled to one or more base stations in a radio communications network and the second communications unit is a wireless user equipment unit.

37. (Original) The communications unit in claim 26, further comprising:

another detector capable of detecting another condition,

wherein the controller is capable of controlling the data packet transmission over the first channel without regard to the condition of the second channel when the other condition is detected.

38. (Original) A mobile radio communications system incorporating the communications unit of claim 26.

39. (Currently Amended) A mobile communications system, comprising:

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one or more base stations;

wireless user equipment units communicating data packets with one or more base stations over a radio interface,

wherein each base station includes:

a first detector configured to determine a signal quality of an uplink channel from the wireless user equipment to the base station, and

a data packet scheduler configured to schedule transmission of data packets over a downlink channel from the base station to the wireless user equipment taking into account the determined quality of the uplink channel,

wherein the scheduler is configured to delay transmission of data packets over the downlink channel until the quality of the uplink channel exceeds a predetermined threshold, and

wherein the feedback signal is an acknowledge (ACK) signal, a negative acknowledge (NACK) signal, or a lost signal corresponding to a data packet transmitted over the downlink channel, and

wherein the one base station is configured to employ an automatic repeat request (ARO) protocol to provide reliable data packet communications with the wireless user equipment and to determine whether the signal quality of the uplink channel is sufficient for the base station to accurately receive an ARO feedback signal from the wireless user equipment.

40. (Original) The mobile communications system in claim 39, wherein the signal quality is a signal-to-interference ratio (SIR).

41. (Original) The mobile communications system in claim 39, the base station further including:

a second detector configured to determine a signal quality of the downlink channel,

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wherein based on the determined signal quality of the uplink and downlink channels, the scheduler is configured to schedule transmission of data packets over the downlink channel.

42. (Canceled).

43. (Currently Amended) The mobile communications system in claim ~~42~~39, wherein the sufficiency of the signal quality of uplink channel is determined so that a probability of error in the received ARQ feedback signal is below a threshold.

44. (Canceled).

45. (Canceled).

46. (Currently Amended) The mobile communications system in claim ~~45~~39, wherein the base station is configured to transit the data packets after a preset delay period expires.

47. (Original) The mobile communications system in claim 39, wherein the wireless user equipment is communicating with two base stations in a soft handover communication.

48. (Original) The mobile communications system in claim 39, the base station further including:

a third detector configured to detect a predetermined condition, wherein the schedule is configured to schedule the downlink data packet transmission without regard to the uplink channel signal quality when the predetermined condition is detected.

49. (Original) The mobile communications system in claim 48, wherein the detected condition is when a doppler frequency of the uplink channel exceeds a threshold.

50. (Original) The mobile communications system in claim 48, wherein the detected condition is when a load of a cell corresponding to the base station is less than a threshold.